

WHAT IS CLAIMED IS:

1. A microscope drape coupling system, comprising:

a first adapter having a first objective lens barrel aperture;

5 a first mounting ring coupled to the first adapter and having a first mounting aperture configured to couple the first adapter to a first objective lens barrel of a first microscope;

a second adapter having a second objective lens barrel aperture;

10 a second mounting ring coupled to the second adapter and having a second mounting aperture configured to couple the second adapter to a second objective lens barrel of a second microscope, the second mounting aperture having a diameter smaller than the first mounting aperture;

15 a housing having a plurality of locking tabs disposed around a perimeter thereof, each locking tab comprising a tongue adapted to engage a groove formed on the first adapter for rotatably coupling the housing to the first adapter, the housing selectively removable from the first adapter via the locking tabs; and

20 a substantially flat transparent protective lens coupled within the housing such that a geometric normal to the transparent protective lens forms an angle with respect to a longitudinal axis of either the first or second objective lens barrel when the housing is coupled to either the first or second objective lens barrel.

2. The microscope drape coupling system of Claim 1, wherein the first and second mounting rings are each formed from a flexible material such that the first and second mounting rings are each adapted to elastically constrict about the first and second objective lens barrels, respectively.

25 3. The microscope drape coupling system of Claim 1, wherein the first mounting ring comprises a plurality of tabs extending inwardly from the first objective lens barrel aperture, wherein the first mounting aperture is defined by the inside edges of each tab.

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4. The microscope drape coupling system of Claim 1, wherein the second mounting ring comprises a plurality of tabs extending inwardly from the second objective lens barrel aperture, wherein the second mounting aperture is defined by the inside edges of each tab.

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5. The microscope drape coupling system of Claim 1, wherein the second adapter comprises a plurality of protrusions configured to rotatably couple the second adapter to the first adapter.

6. A method of coupling a drape to a microscope, comprising:

providing a first adapter having a first objective lens barrel aperture and a first mounting ring, the first mounting ring having a first mounting aperture;

rotatably coupling a housing to the first adapter, the housing having a substantially flat transparent protective lens coupled therein such that a geometric normal to the transparent protective lens forms an angle with respect to an optical axis of a first objective lens housed within a first objective lens barrel when the housing is coupled to the first objective lens barrel; and

coupling the first adapter to the first objective lens barrel, the first objective lens barrel having an outside diameter slightly larger than a diameter of the first mounting aperture and slightly smaller than a diameter of the first objective lens barrel aperture.

7. The method of Claim 6, further comprising:

providing a second adapter having a second objective lens barrel aperture and a second mounting ring, the second mounting ring having a second mounting aperture;

coupling the second adapter to the first adapter; and

coupling the second adapter to a second objective lens barrel, the second objective lens barrel having an outside diameter slightly larger than a diameter of the second mounting aperture and slightly smaller than a diameter of the second objective lens barrel aperture.

8. The method of Claim 6, further comprising coupling a drape to an annular surface disposed around a perimeter of the first adapter.

9. The method of Claim 6, wherein coupling the first adapter to the first objective lens barrel comprises elastically constricting the first mounting ring about the first objective lens barrel.

10. The method of Claim 7, wherein coupling the second adapter to the second objective lens barrel comprises elastically constricting the second mounting ring about the second objective lens barrel.

5 11. The method of Claim 6, wherein the first mounting ring comprises a plurality of tabs extending inwardly from the first objective lens barrel aperture, wherein the first mounting aperture is defined by the inside edges of each tab.

10 12. The method of Claim 7, wherein the second mounting ring comprises a plurality of tabs extending inwardly from the second objective lens barrel aperture, wherein the second mounting aperture is defined by the inside edges of each tab.

15 13. The method of Claim 6, wherein rotatably coupling the housing to the first adapter comprises engaging a plurality of tongues on respective ones of a plurality of tabs formed on the housing with respective ones of a plurality of grooves formed on the first adapter.

14. A microscope drape coupling system, comprising:

a first adapter having a first objective lens barrel aperture;

a first mounting ring coupled to the first adapter and having a first mounting aperture configured to couple the first adapter to a first objective lens barrel of a first microscope that has an outside diameter slightly larger than a diameter of the first mounting aperture and slightly smaller than a diameter of the first objective lens barrel aperture;

a housing configured to rotatably couple to the first adapter; and

a substantially flat transparent protective lens coupled within the housing such that a geometric normal to the transparent protective lens forms an angle with respect to an optical axis of a first objective lens housed within the first objective lens barrel when the housing is coupled to the first objective lens barrel.

15. The microscope drape coupling system of Claim 14, further comprising a second adapter configured to couple to the first adapter, the second adapter comprising:

a second objective lens barrel aperture; and

a second mounting ring coupled to the second adapter and having a second mounting aperture configured to couple the second adapter to a second objective lens barrel of a second microscope that has an outside diameter slightly larger than a diameter of the second mounting aperture and slightly smaller than a diameter of the second objective lens barrel aperture, the second mounting aperture having a diameter smaller than the first mounting aperture.

16. The microscope drape coupling system of Claim 15, wherein the second adapter comprises a plurality of protrusions configured to rotatably couple the second adapter to the first adapter.

17. The microscope drape coupling system of Claim 14, wherein the first adapter further comprises an annular surface disposed around a perimeter thereof, the annular surface adapted to couple to a drape.

5        18.     The microscope drape coupling system of Claim 14, wherein the first mounting ring is formed from a flexible material such that the first mounting ring is adapted to elastically constrict about the first objective lens barrel in order to couple the first adapter thereto.

10       19.     The microscope drape coupling system of Claim 15, wherein the second mounting ring is formed from a flexible material such that the second mounting ring is adapted to elastically constrict about the second objective lens barrel in order to couple the second adapter thereto.

15       20.     The microscope drape coupling system of Claim 14, wherein the first mounting ring comprises a plurality of tabs extending inwardly from the first objective lens barrel aperture, wherein the first mounting aperture is defined by the inside edges of each tab.

20       21.     The microscope drape coupling system of Claim 15, wherein the second mounting ring comprises a plurality of tabs extending inwardly from the second objective lens barrel aperture, wherein the second mounting aperture is defined by the inside edges of each tab.

25       22.     The microscope drape coupling system of Claim 14, wherein the housing comprises one or more locking tabs disposed around a perimeter thereof, each locking tab comprising a tongue adapted to engage a respective groove formed on the first adapter for rotatably coupling the housing to the first adapter, and wherein the housing is selectively removable from the first adapter via the locking tabs.

23. A microscope drape coupling system, comprising:

a first adapter configured to couple to a first objective lens barrel of a first microscope;

a housing configured to rotatably couple to the first adapter; and

5 a substantially flat transparent protective lens coupled within the housing such that a geometric normal to the transparent protective lens forms an angle with respect to an optical axis of a first objective lens housed within the first objective lens barrel when the housing is coupled to the first objective lens barrel.

10 24. The microscope drape coupling system of Claim 23, wherein the housing is selectively removable from the first adapter via one or more locking tabs disposed around a perimeter of the housing.

15 25. The microscope drape coupling system of Claim 23, further comprising a second adapter configured to rotatably couple to the first adapter and further configured to couple to a second objective lens barrel of a second microscope.

20 26. The microscope drape coupling system of Claim 23, wherein the first adapter further comprises an annular surface disposed around a perimeter thereof, the annular surface adapted to couple to a drape.

25 27. The microscope drape coupling system of Claim 23, wherein the housing comprises one or more locking tabs disposed around a perimeter thereof, each locking tab comprising a tongue adapted to engage a respective groove formed on the first adapter for rotatably coupling the housing to the first adapter, and wherein the housing is selectively removable from the first adapter via the locking tabs.